

Title (en)
APPARATUS AND METHODS FOR SPIKING NEURON NETWORK LEARNING

Title (de)
VORRICHTUNG UND VERFAHREN FÜR LERNVORGÄNGE IN EINEM NEURONALEN SPIKING-NETZWERK

Title (fr)
APPAREIL ET PROCÉDÉ POUR IMPULSER L'APPRENTISSAGE D'UN RÉSEAU DE NEURONES

Publication
EP 2885745 A4 20170517 (EN)

Application
EP 13829473 A 20130816

Priority
• US 201213588774 A 20120817
• US 2013055381 W 20130816

Abstract (en)
[origin: US2014052679A1] Event-based updates in artificial neuron networks may be implemented. An internal event may be defined in order to update incoming connections of a neuron. The internal event may be triggered by an external signal and/or internally by the neuron. A reinforcement signal may be used to trigger an internal event of a neuron in order to perform synaptic updates without necessitating post-synaptic response. An external event may be defined in order to deliver response of the neuron to desired targets. The external and internal events may be combined into a composite event configured to effectuate connection update and spike delivery to post-synaptic target. The scope of the internal event may comprise the respective neuron and does not extend to other neurons of the network. Conversely, the scope of the external event may extend to other neurons of the network via, for example, post-synaptic spike delivery.

IPC 8 full level
G06N 3/04 (2006.01); **G06N 3/10** (2006.01)

CPC (source: EP US)
G06N 3/049 (2013.01 - EP US); **G06N 3/10** (2013.01 - EP US)

Citation (search report)
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• [A] US 2012011093 A1 20120112 - APARIN VLADIMIR [US], et al
• [X1] LEE K ET AL: "Synaptic plasticity model of a spiking neural network for reinforcement learning", NEUROCOMPUTING, ELSEVIER, AMSTERDAM, NL, vol. 71, no. 13-15, 1 August 2008 (2008-08-01), pages 3037 - 3043, XP025679264, ISSN: 0925-2312, [retrieved on 20071022], DOI: 10.1016/J.NEUCOM.2007.09.009
• [X1] KARIM EL-LAITHY ET AL: "A Reinforcement Learning Framework for Spiking Networks with Dynamic Synapses", COMPUTATIONAL INTELLIGENCE AND NEUROSCIENCE, vol. 2011, 1 January 2011 (2011-01-01), US, pages 1 - 12, XP055361640, ISSN: 1687-5265, DOI: 10.1155/2011/869348
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Designated contracting state (EPC)
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US 2014052679 A1 20140220; US 9460387 B2 20161004; CN 104685516 A 20150603; CN 104685516 B 20180330; EP 2885745 A1 20150624; EP 2885745 A4 20170517; JP 2015529357 A 20151005; JP 6169697 B2 20170726; WO 2014028855 A1 20140220

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US 201213588774 A 20120817; CN 201380043294 A 20130816; EP 13829473 A 20130816; JP 2015527661 A 20130816; US 2013055381 W 20130816